The AMERICAN ENGINEER

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ENGINEERS' PANEL EXPLAINS LABOR PROBLEM

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS
FOUNDED 1934

APRIL, 1947

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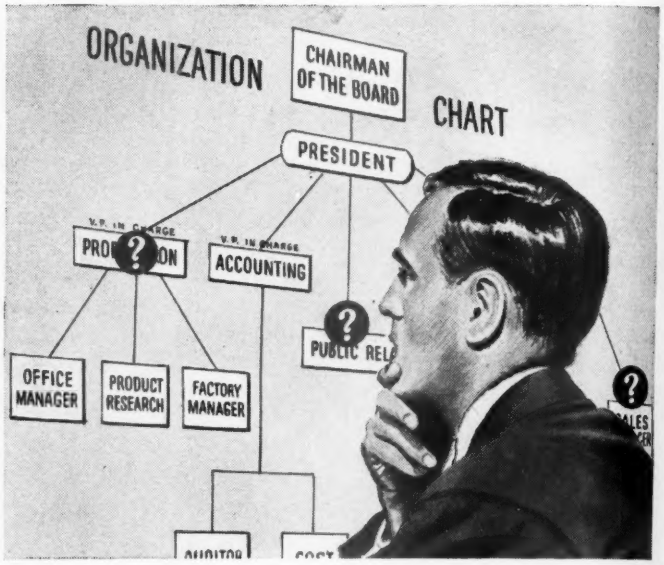

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Employing An Engineer -- Hiring Practices Analyzed

An analysis of general industry practices based on a survey prepared by the Joint Economic Status Committee. This report is designed to answer some of the questions which (1) employers and (2) engineer job seekers frequently ask. The answers are preliminary—final ones will be given when the Committee completes its work.

Are you going to employ an engineer? What qualifications will you want him to have? What do others look for in an engineer prospect? Are you going to be in step with usual employment practices, or do you use your own individual methods of selecting engineer employees?

From time to time employers have sought the answers to these questions. Young graduate engineers have tried to learn what prospective employers will look for when interviewing them; what qualifications they will need to get started in their chosen profession.

Factual Source Sought

Some data has been available, but it has been scattered through a mass of publications and reports. There has been no single source of factual data on which employers and job seekers could safely rely.

Consequently, in an effort to provide a source of facts, the Engineers Joint Council Committee on the Economic Status of the Engineer, with representatives of the National Society of Professional Engineers participating, has made a preliminary survey of the problem. It has just issued a report on "employer practice regarding engineering graduates" which is based on this preliminary survey—and this report contains some of the answers.

Specific Questions Posed

The Economic Status Committee has questioned 174 firms. 104, employing 33,758 graduate engineers, have replied. Factual data was sought to answer such questions as:

What type of engineers are hired? How are young engineers recruited? How are experienced engineers for specific openings obtained? Is there any difference in hiring practices for engineers and other employees? What are the most important factors taken into consideration in hiring an engineer? How much are newly employed engineers paid?

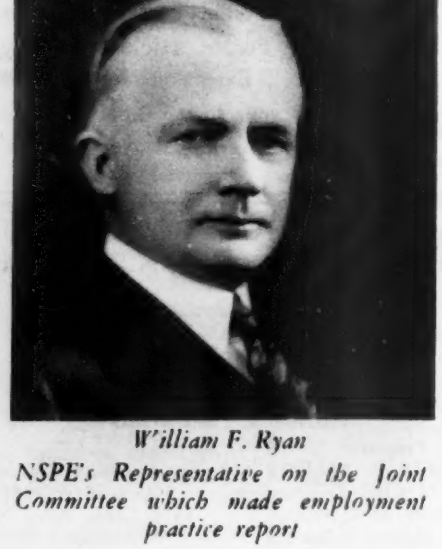
Included in the survey are firms in the following fields: instrument, electrical equipment, petroleum industry, chemical, aircraft, machinery, building, paper, glass, utilities, metals, coal, textiles, soap, rubber, automotive, shipbuilding, transportation and food.

Statistical Signicance Undetermined

Caution must be exercised in using the information contained in this report, since the statistical significance of the sample has not been determined. Specific employer practices in different industries have not been reported in detail. Additional information may be needed in some industries and for some purposes and some of the information gathered from these 104 concerns may be discarded for the Economic Status Committee's final purposes.

However, until the committee has an opportunity to explore these problems in greater detail here are preliminary answers to some of the questions:

1. *Where are the most job opportunities for engineers?* The greatest number of engineers is employed in the instrument, electrical, petroleum, chemical and aircraft industries. A group of 32 firms in these fields reported employing 21,252 graduate engineers—4.85 per cent of their total employees.



William F. Ryan
NSPE's Representative on the Joint Committee which made employment practice report

The machinery, building, paper, glass, utilities, metals and coal firms which replied employ a total of 9,333 graduate engineers. Reporting firms in the textile, soap, rubber, automotive, shipbuilding, transportation and food industries have a total of 2,588 graduate engineers on their payrolls:

The following table shows the proportion of employees in each reporting industry group who are engineers:

Industry	*Percent*
Colleges	44.6
Instrument	6.6
Electrical	5.1
Petroleum	4.9
Chemical	4.2
Aircraft	3.9
Machinery	2.0
Building	2.0
Paper	1.8
Glass	1.5
Utilities	1.4
Metals	1.4
Coal and Coke	1.0
Textiles	0.9
Soap	0.8
Rubber	0.7
Automotive	0.6
Shipbuilding	0.6
Transportation	0.5
Food	0.3

2. *What salaries are young engineers paid?* Twenty per cent of the reporting firms indicated that every new engineer employee is regarded as a special case, and starting salary is based on his particular qualifications. The others were about equally divided between those who are influenced by prevailing rates in other companies and those who indicate that their salary scales are arrived at independently.

No company reports a starting monthly salary of less than $150, and only four less than $175. Five companies report starting salaries above $250. The median (50 per cent level) is approximately $207 per month.

The Compton Committee* summarized data contributed by 125 companies in April 1946. The average

(*Continued on page* 12)

* Committee on the Outlook in the Demand for and Supply of Engineering Graduates of the Society for the Promotion of Engineering Education (recently renamed the American Society for Engineering Education).

The Public Responsibility of the Engineer

Congressman Hinshaw is a member of the House of Representatives from the 20th California District. The following is a condensation of his address delivered before the Annual Meeting of the American Society of Mechanical Engineers, December 1946 in New York City

By Hon. Carl Hinshaw

The engineer seldom offers himself for election to public office and yet his kind are badly needed. There are pure theoreticians and there are men who are essentially practical, but the engineer is that unique synthesis of the theoretical and the practical that is so badly needed in the service of the public today as leaders.

Servant of Servants

Why are so few engineers to be found in elective public offices? Every government and subdivision of government employs one or more engineers either in a professional capacity or in a managerial capacity where he is subject to the direction of a politician or a politically composed legislative body of some kind, and the engineer seems content for it to be so. He is the servant of the servants of the people. Why should that be? Why does the engineer shun the political contest which leads to leadership? I think it arises from the very nature of his early training and his professional experience. He is thereby inhibited from vocal expression in public. He becomes shy of public contacts because of the very power and yet the limitations of his knowledge. The engineer is essentially a specialist, frequently to the complete exclusion of any outside interest.

Signs and Symbols

That characteristic begins to become particularly noticeable early in the course of those educational institutions where an engineering college is an appendage to colleges of the liberal arts and sciences. There the engineering student spends most of his afternoons in the drafting room or laboratory and his evenings with his nose buried deep in signs and symbols that are more Greek to the liberal arts student than Greek itself. In his sophomore year, the engineering student becomes almost completely separated from his fellows of the arts and sciences, and in the course of the remainder of his formal education he is in worlds apart.

Liberal Studies Urged

In the educational process leading toward other professions such as law and medicine, the important professional work is taken in a post-graduate course. I have often wondered why it is not thought to be just as necessary for an engineer to learn something of economics, philosophy and the literature of the ages as it is for those who are to engage in other professions. Why should not the engineer be grounded also in such mundane and simple arithmetic as is involved in ordinary accounting, and in such ancient usages as are found in the law of contracts and negotiable instruments?

Rep. Carl Hinshaw

But, generally it is not so. The engineer is brought up to be an engineer and nothing more, and yet, at the same time, there is created in him that unique synthesis of the very accurate technician with the essentially practical viewpoint which is so highly desireable but rarely found in positions of public leadership.

In this unique synthesis of qualities so desirable in positions of public leadership, the engineer has another strong quality which is inherent in him, namely, integrity. The engineer is basically a man of high integrity because his every professional act must be subject to proof—to verification of basic facts and final proof in the test of service. From the day he first studies geometry his motto is "Quod erat demonstrandum," and that is his taskmaster to the end of his days. No matter to what end his flights of inventive genius may lead him there burns in his soul the determination to be finally able to engrave into the base of his brain-child the letters Q.E.D. for all to see. By his works he is known. He is not given to wordy promises, and he will not make a statement as of fact that is to his knowledge untrue, or even a bit doubtful. His kind are needed badly in public life.

Transition to Public Life

I wonder frequently, how the rest of the few of us who have broken out of our professional status and into public life, happened to crack their shells. My own story may be of interest to you and perhaps it can be told in very brief outline before I tell you a more important story.

Upon my successful graduation with the degree of Civil Engineer, my father, who had studied engineering and law, urged me to do post-graduate work in business administration. I wore the insignia of the Corps of Engineers from 1917 to 1920, and then found myself unemployed for several months. I lived then with an uncle who had in his library the famous five-foot shelf of classics. I went through it with a new-found thirst which has never since been quenched. Practical experience commenced for me in an automotive factory, and included, in due course, management, sales engineering, sales and sales management and then finance, when fate changed things all around.

Deep family misfortune intervened to cause distaste for Chicago and send

(*Continued on next page*)

(*Continued from preceding page*)

me to California where I engaged in the Real Estate business, which seemed to be a common endeavor there. Then, as President of my Realty Board, I started a highway project that dragged me into politics willy-nilly. The project was a success and I was urged to run for Congress—just like that—and I have just recently been re-elected to serve my fifth successive term. But until I became President of that Realty Board in 1934 I had never stood on my feet to talk in public.

$100 Cash Bond Guarantee

However, there is a far more interesting story than mine. It is the story of your own Ralph Flanders, a member of your society of such eminence that he has served the ASME as its President. Ralph Flanders is a man who became a mechanical engineer the hard way. With only eight years of formal schooling in the public schools of his native state of Vermont, a man who never attended any college, he has been awarded eight honorary degrees from leading American universities. Shortly after the end of his school days, which he terminated at the age of fifteen, he entered a machine shop to learn the machinist's trade under an old-fashioned apprenticeship system. His father had to put up a $100.00 cash bond to guarantee that he would complete his three years of apprenticeship, a job which paid him at the rate of four cents per hour for a sixty-hour week. Upon the completion of his apprenticeship, he served as a journeyman machinist for about six months before an opportunity came to him to go into the drafting room where he worked for a year and a half learning that art. That period in the drafting room excited his interest in obtaining the necessary theoretical knowledge which goes with a machine designer's and mechanical engineer's work.

Knowledge for Practical Use

In retrospection of that period of his life, Ralph Flanders says: "Ever since that time, my life has been a constant pursuit of the kind of theoretical knowledge which can be turned into practical use for the improvement of the conditions of daily life, whether in machines, in business, or in the maintenance of employment and of the high standard of living in the life of the nation. My experience has taught me that the unsolved problems can be solved by those who are willing and able to bring theory and practice together."

The spirit disclosed by those words caused him to become deeply concerned with the problems of the workers in the factory which he managed when the depression of 1921 settled upon them. His personal interest in that group of men in that trying time, his fundamental humaneness, was the great force which caused him to begin his long career of public service—a career which has gone hand in hand, and side by side with his career as a great mechanical engineer. Let me quote him again. Speaking of the hard times of 1920 and 1921 and the much harder times that began in 1930, he said "It affected the lives of hundreds of people whom I knew personally and for whom and for whose families I felt a large share of personal responsibility. There was nothing of the practical sort that could be done. Purely practical solutions were small-scale and hopeless. It was necessary to study underlying causes, and to this I have devoted my spare time for many years . . . to bring the teachings of correct underlying theory to the solution of practical problems."

Consulted by President

From here on, we find the trained mind of a practical engineer becoming perfected in economics and political science in the public interest, until we find him consulted by high government officials, even to the President of the United States. His public services have been so numerous and so eminently successful, that indeed he could not avoid becoming the Senator from Vermont. His term of public office has already commenced as he was appointed by the Governor of Vermont to fill the unexpired term of his distinguished predecessor Senator Austin.

Another distinguished engineer joined Ralph Flanders as a Member of the United States Senate in January. He is George W. "Molly" Malone of Nevada. Senator-elect Malone is a civil and mining and metallurgical engineer who evidently acquired his urge toward public office through his keen interest in the development of the Western States. Having served as Secretary to a Senate Investigating Committee during the war, he must have been deeply impressed by the dire need of engineers in the Senate to leaven the legal loaf by talking common sense; lawyers seem to enjoy constructing lofty premises like inverted pyramids firmly attached to the under side of a dense rhetorical cloud. It takes an engineer to bring them to earth-apex up.

But, why should Ralph Edward Flanders and George Wilson Malone be the only engineers in the United States Senate? Why are not more of their kind in that distinguished company? Is it because of a lack of humaneness in engineers generally? We know that is not so, for engineers are essentially humane. Is it because of shyness? Yes, in part. The education and training of an engineer are such as to make him shy of public contacts. How can he be brought out from his shell? How can more of his kind be encouraged to offer themselves for the elective positions of public leadership?

Speaking Courses in College

It seems to me that one way to crack his shell of shyness is to teach him to speak intelligently, because intelligence is a pre-requisite for the making of an engineer, but he must be taught to speak interestingly, which means to speak fluently in lay language on subjects which he understands. That training can and should commence in the engineering colleges, if not earlier.

From my own experience as an engineer, and as a public servant, I am convinced that public speaking should be a part of the curriculum of every engineering college. In order that the nascent engineer may have the right training in public speaking, he should engage in debates on public questions with budding lawyers, particularly because in competing with a young lawyer he will take on an opponent who is becoming adept in the art of talking convincingly about things of which he frequently knows little.

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THIS MONTH'S COVER—

This month's cover picture is of the engineers' panel which testified before the House Committee on Education and Labor in favor of the so-called Hinshaw Bill which would amend existing law to conform to the peculiar needs of professional engineers. Congressman Carl Hinshaw, author of the bill, is also the autor of the article appearing on this and the preceding page. He is an engineer.

In the group, which also testified before the Senate Committee on Labor and Public Welfare, are shown, from left to right panel chairman E. Lawrence Chandler, Eastern Representative of ASCE, representing EJC; Gail A. Hathaway, ACSE; William F. Ryan, ASME; Edmund R. Purves, AIA; Congressman Hinshaw; Clark W. Ransom, AIEE; Ritchie Lawrie, Jr., NSPE; and W. I. Burt, AICHE.

Some Thoughts Concerning NSPE Affiliation with EJC

Possible affiliation of the National Society of Professional Engineers with the Engineers Joint Council has been widely discussed in engineering circles for the last few months. . . . As Mr. A. B. Parsons points out in the following editorial which is reprinted from MINING AND METALLURGY, NSPE has not asked for affiliation nor has EJC extended an invitation. . . . However, Mr. Parsons has presented a clear analysis of the problem, together with some thought provoking suggestions. . . . It merits serious consideration.

By A. B. Parsons

A question that is engaging the attention of leaders in both organizations is the desirability of making the National Society of Professional Engineers a sixth constituent member of the Engineers Joint Council. The NSPE has not asked for such action; nor has the EJC extended an invitation. The matter is open and merits thoughtful discussion. For the benefit of those that are not informed, the Society and the Council may be described briefly.

No Technologic Aims

The NSPE, organized in 1934, has a nation-wide membership of about 12,000 individual engineers, each of whom is "licensed" in the State in which he lives. Accurate data are not available but presumably most of them are members either of one of the four founder societies or of some other national engineering organization devoted primarily to technology, such as those of chemical, automotive, or radio engineers. The NSPE specifically disavows any desire to deal with technologic matters. Its stated functions and objectives are "the advancement of the public welfare and the promotion of professional, social, and economic interests of the engineer by means of education, legislation, and public relations and the establishment and maintenance of high ethical standards." Membership has doubled in the last five years; but the Society has not yet attracted a substantial proportion of the recognized leaders in the engineering profession.

Hierarchy of Fifteen

The EJC is a league or federation of the four Founder Societies and the American Institute of Chemical Engineers. It functions through a hierarchy of fifteen including the presidents, the junior past presidents, and the secretaries of the five societies; but it is primarily an advisory and coordinating agency whose function is to recommend parallel action by the five societies though it may assume administrative functions under specific instructions from the boards of control of all of the constituent societies. Like the NSPE it scrupulously avoids technology. Broadly, its objectives are the same as those of the NSPE as heretofore set forth. Both desire to act in behalf of all qualified professional engineers *in spheres of common interest* irrespective of the technologic branch of the profession that they represent. On the face of things it would seem sensible for the two agencies to join forces; and a simple way would be for the NSPE to become a constituent society in the EJC. However, if analyzed a little deeper several considerations suggest that this might not be in the best interests of the profession as a whole:

Similar Objectives

(1) A federation ought to consist of a group of similar units—organizations whose major functions and objectives are similar and parallel. It is clear that such similarity does not exist between the NSPE and the present constituents of EJC. NSPE would be an incongruous entity and has no place in the EJC on the basis of logic.

(2) Inclusion of NSPE as a constituent of EJC would not increase the basic strength of the EJC because each member of the NSPE (at least those that have achieved distinction and standing in the profession) is already a member of at least one society in the technologic group —usually one of the five present constituents. Whereas, it would be entirely logical for the EJC to add to its roster the Society of Automotive Engineers or the Institute of Radio Engineers, the same does not hold with respect to the NSPE.

(3) Would the NSPE be well advised to accept an invitation to become a constituent of the EJC? Would not such a course tend to devitalize the NSPE? Would not the NSPE surrender its distinctive function and field to the EJC? Would not such a step remove the incentive for a member of the American Society of Civil Engineers (just for example) to join the NSPE for the reason that his ASCE membership would make him a full participant in the essential work of the NSPE in promoting the professional, social, and economic interests of all engineers? The eventual outcome might easily be a lingering death for NSPE.

Full Support for NSPE

An alternative procedure exists through which the objectives of all concerned might be achieved. This would be for the EJC (which, by the way, has been described by some of its most ardent supporters as "essentially an interim agency") to disband and for the present constituent societies to put their full support behind the NSPE. The most effective step would be to urge their members to become interested and active members of the NSPE. By mutual consent the NSPE would become the recognized agency through which professional engineers would cooperate to achieve those objectives common to all that now are being pursued by both the EJC and the NSPE. All that the NSPE needs is earnest and enthusiastic leadership from influential and public-spirited engineers in adequate numbers.

The weaknesses inherent in any organization of the federation type have been demonstrated repeatedly and are well known. The machinery is necessarily clumsy and ponderous; deliberation is sluggish and inconclusive; and action is vitiated by delay and indecision. Some seem to think that these weaknesses are intensified in connection with the engineering societies because engineers are cantankerous. But the trouble is not with the individuals; it is with the system.

Merits Careful Consideration

A dynamic organization of dues-paying members has many advantages; and, as such, the NSPE seems to merit careful consideration by those who have at heart the best interests of the engineering profession. It is important to make clear that each of the technologic societies would continue to promote in its own way the professional and economic interests of its own members.

NYSSPE Membership Plan A Promotional Pattern

EDITOR'S NOTE: In September 1946, the newly organized Membership Steering Committee of NYSSPE met with its General Chairman in Albany and prepared a membership campaign aimed at obtaining 500 new members by June 1947. This plan included the distribution of material and literature and personal contacts with the prospect.

We believe the recent Sales Plan letter by Clayton A. Miller, which went to all members in New York State, contains a timely contribution to the thinking that must be done by the entire membership of NSPE in its 1947 drive for 10,000 new members.

By Clayton A. Miller

If we are to expand successfully our membership in NSPE and make it truly the spokesman of the entire profession, we must know our product and assure our prospect of its value. NSPE has a definite Program of Policy, its membership is growing, but to reach a goal of 40,000 members will require an awakening from the lethargy of many members and a spirit of co-operation from all. Many chapters are approaching or meeting their quotas—others must follow.

What is a Professional Engineer? Briefly, a "person with special training and experience in one or more of the technical branches of engineering who is legally recognized by the State as being qualified to practice the profession of engineering". The following is a summary of our whole plan—for the Member or the Non-Member. A good slogan might well be, "Membership in NSPE and registration, not regimentation, for every Professional Engineer.

The Trend

Today, there are 48 States with engineering registration laws. The professional engineer has accepted this challenge and already has NSPE entrenched in 25 of these States. There are 15,000 members in the National Society of Professional Engineers, the growth curve is rapidly becoming steeper and our goal is 40,000 members for the not distant future. Being founded on sound basic principles, paralleling the nation's sub-divisions at the local, state and national levels, the members of this Society have a direct voice in its affairs and the Society is bound to grow in influence. Having for its object the advancement of the public welfare and the promotion of the professional, social and economic interests of the Professional Engineer, it cannot fail.

Membership Support is Vital

Your support and guidance will build this Society into a great instrument for professional advancement and for the development of profesional consciousness among engineers. Your indifference may set the engineer back a decade. Top men of the profession, giving freely of their time and talent, have laid a sound foundation for the Society. It is bound to succeed. There is every good reason why it should be in a class with the American Medical and the American Bar Associations as an outstanding representative of our profession, better understood and better appreciated by the people of America.

Clayton A. Miller

Engineer Miller is a native of Ohio and a graduate of the University of Illinois, BS in EE 1914; Eta Kappa Nu Honorary Fraternity; AIEE; Past President of Albany County Chapter; Past Chairman NYSSPE Membership Committee and Chairman Eastern Area NSPE Membership Committee; Budget Director, New York Power and Light Corporation, Albany, New York.

However, membership is the life blood of any Society. We have an ambitious 1947 membership quota and it can be attained. To the Non-Member Engineer, I say, consider carefully what our Society has to offer and to our Members, I would say, let us review the inducements, the benefits and the cost, then go forth and sell your product. New York State has 23 local chapters. Chapter membership committees have a real job to do and they must have your assistance, NOW, not at some future date.

"Are you an active Members
Who desires his Chapter strong,
Or are you satisfied to be
The kind who 'Just Belong'?"

A Selling Job for You

Each member of this Society is a potential salesman. There are over 13,000 registered *non-member* engineers in New York State, some already sold but not yet approached, others to be sold on the need for joining our Professional Society. Interest in your profession will put this across. The cost to join is roughly a nickel a day—surely not enough to keep any Engineer away. Your chapter membership committee has names of hundreds of engineers who should be contacted, but their "bread and butter job" must take place first. However, with your help, many of these prospects can be reached. Let's help them do a real job and give your chapter president the support he deserves.

The Plan

Following is a brief outline of a 4 Point Sales Plan based on four important buying decisions encountered in making any Sale.* Expand it with your own arguments and you have signed up your prospect before you realize it.

1. The NEED 2. The SOLUTION 3. The ASSURANCE 4. The VALUE

1. The Need

(Do I have a need for membership?)

(a) *Non-Membership* prevents those intimate contacts with active members of your profession and eliminates opportunity for attendance at regular

* These 4 points are those used by the Vocafilm Corporation in developing sales programs. They have been adapted to the NYSSPE membership program by Mr. Miller.

scheduled professional programs provided by your society.

(b) *Non-Membership* destroys opportunity to achieve unity of thought and action among all classes of founder society engineers. This unity is sponsored by our profesisonal society.

(c) *Membership* gives you a real opportunity to initiate and support or oppose state and national legislation dealing with your profession at chapter, state and national levels.

(d) *Membership* insures legal recognition for the engineer in society and in his profession.

2. The Solution

(Does this Society fill that need?)

There are over 300 so-called engineering societies. Our National Society of Professional Engineers is the logical organized means to represent the professional members of these groups. Our Society stands squarely for the following precepts as outlined in the Preamble to its constitution:

(a) Safeguards life, health and property by restricting the practice of engineering to properly qualified persons.

(b) Establishes high ethical standards of conduct.

(c) Creates and endorses adequate laws and practice.

(d) Focuses public attention upon the professional standing, functions, requirements and accomplishments of engineers.

(e) Sponsors and promotes honorable procedure tending towards emoluments commensurate with the dignity and responsibility of the profession.

(f) This Society *has a definite program of policy* for a truly unified profession.

3. The Assurance

(What assurance have I this is the best answer?)

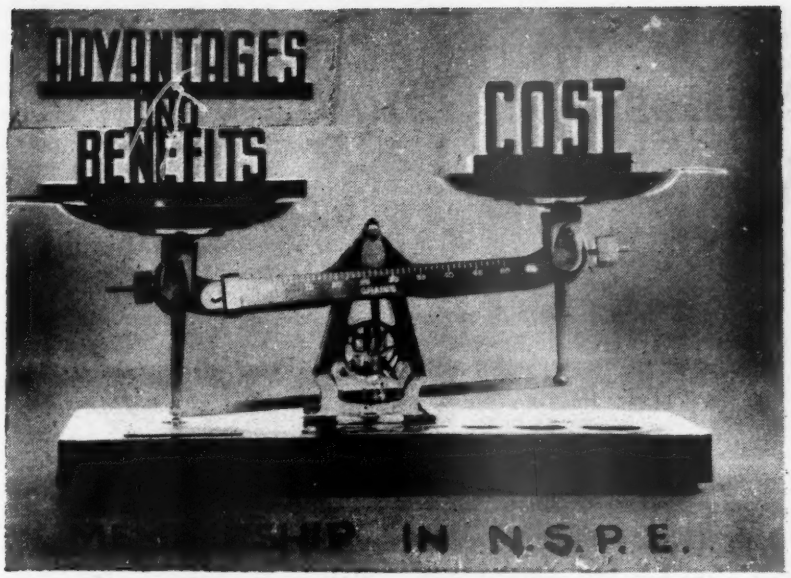
(a) Technical, or founder societies are important for the exchange of engineering knowledge, but they are limited in their field. Our society welds together all classes of engineers into one homogeneous group having local, state and national representation. Each branch is responsible for activities in its own sphere and each is responsible to the individual member who has a direct voice in electing its officers and developing its policies.

(b) Over 15,000 present members in NSPE—the goal is 40,000.

(c) State societies have adopted schedules of minimum fees and salaries and recommend their use by professional engineers and their clients or employers. These are not perfect, but a good start has been made. Your cooperation will help to produce better schedules.

(d) Establishment of Engineers-in-Training program for the "embryo" engineer.

(e) Large groups of engineers in industry are being attracted to our society to escape involuntary organization within their ranks.



Advantages and Benefits Outweigh Cost

4. The Value

(Twenty Dollars a year is the average cost. How is this spent?)

(a) The New York State Society defrays cost of administrative work at State Headquarters, employs an Executive Secretary in handling state-wide problems beyond the scope of an individual chapter. This includes expansion of Membership, Legislative work, Public Relations, Practice and Ethics and many other items. For this and much more, it now receives $10.00. The recent publication of the *society brochure* has well defined the objectives and accomplishments. Read your copy carefully and you will see that many are giving voluntary service for our benefit.

(b) The National Society maintains headquarters in Washington, D. C. The Society was founded in 1934; membership now over 15,000; growth curve rapidly increasing. National Society supplies co-ordinated data to existing state societies, promotes new state societies, employs an Executive Director, also, a legislative analyst who devotes full time to legislative matters in both houses of Congress to protect against and promote national and state legislation. It concerns itself with the broad professional problems common to all engineers in the ethical, social, economic and political fields. Also, publishes a monthly magazine, *The American Engineer,* for all members. For this and much more it receives $7.00. *Note*: *National Dues to Remain at* $7.00 *in* 1948 (*See January* 1947 *American Engineer*).

(c) Local chapters establish their own schedule of dues depending on the requirements of each chapter for carrying out its own program. This averages about $3.00 annually, but, without state and national support, the local unit would be just another local society functioning mainly for entertainment, etc.

This Is Your Job

Yes, you have a tough job to do. Our goal is high but its successful accomplishment will benefit us as individuals and as a group and will increase our usefulness to society. NSPE offers every engineer an opportunity to participate in a growing movement for the advancement of your chosen profession.

Already 15,000 Engineers feel it worth this small cost. Eventually a membership of 40,000 enthusiastic members in one unified national organization, would definitely establish NSPE as the spokesman for the entire engineering profession. With these thoughts in mind, let us tackle this job with initiative and with a determination to sign up another new member today. YOU CAN DO IT!

MORE MEMBERS—MORE FUNDS
—MORE BENEFITS

Professional Engineers And Society

By Dr. Richard R. Price

Executive Secretary, Minnesota Association of Professional Engineers. This is the first of a series of lectures to be delivered before the Senior Class of Engineering Students at the University of Minnesota. This address was delivered on January 14, 1947

Dr. Price was formerly University Extension Director and Secretary of the Minnesota League of Municipalities.

This is the first of a series of nine weekly lectures designed to orient the neophyte engineer in the profession which he plans to pursue and in the society which he is destined to serve. The remaining lectures, with one exception, will be delivered by professional engineers, each dealing with a specialized area of the general field of engineering. I am not an engineer; therefore my theme will be the engineer's relations to the society of which he is a part, to which he contributes his services and from which he derives his sustenance.

Attaining a Full Rich Life

But first of all, let me say that every man has two things to do in life; make a living and live a life; and the second of these is the more important. For making a living you have been pursuing a course of study for four or five years. To this you will add during the course of years, training and experience, and thus you will attain at last professional status. But to attain a full, rich life you must adjust yourselves to your social environment and learn to contribute to as well as to draw from the rich social heritage. You are the inheritors of a great treasure of facts, principles and working methods, many of which date back to remote antiquity. You are in duty bound to preserve that treasure and to add to it. Let not the great tradition be soiled or marred in your hands.

Artisan v. Professional Man

As you enter your working life you will have to make several important decisions. One of these decisions, and a major one, is this: Am I to be an artisan, or a professional man? In thus pointing out the choice, I am making no derogatory slur on artisans. They have their appropriate and honored place in our economic and social system. But I am assuming that your training in this institution has been in the direction of professional life. To measure up to this objective, you will need more than the traditional technological education and training. You will need a broad background of history, philosophy, economics and sociology—to mention only four of the major fields of learning. If you did not get this background in college, you must get it after you leave. You must prepare to be students throughout life. That is why the professional engineers are pleased with the new five-year curriculum in engineering, of which 20 per cent will be devoted to the social studies or humanities. That is how you will acquire a keen sense of social responsibility and obligation. You will not practice your profession in a vacuum: you will have invisibly about you social pressures, influences, traditions, customs and popular currents of thought and action.

Richard R. Price

Let me emphasize here that mere knowledge or learning will not suffice, nor will mere acumen. What the engineer needs is critical judgment, the power of discrimination, the ability to choose between the good and the best. The ultimate goal is understanding or wisdom. Knowledge is power; but wisdom shines in the control of power.

The failure of mere technology to accept and exercise a sense of social responsibility is well illustrated by the recent example of Germany. A recent writer puts the case forcibly:

Technological Robots

"The German colleges of engineering turned out large numbers of intelligent, complacent, college-trained technological robots. These men were not 'educated' in the best sense of that word. The technologists were, of course, firmly wedded to their slide rules and to their technical manuals. They were perfectly willing, as a matter of course, to work for any group that hired them. These men felt no special or other responsibility whatsoever for the ends to which their highly specialized skills were put. As technicians they acted merely as the extremely competent tools of their employers. Thus they worked their way into the very center of the industrial and political system of Nazi Germany. Their skills were used with great effectiveness for the promotion of thoroughly anti-social ends, the real nature and purpose of which these men had little knowledge, and less concern."

A Lasting Vivid Lesson

This inadequacy of mere technological training to provide progressive and liberal leadership for a nation and to prevent seizure of power by selfish and ruthless autocrats, as exemplified within recent memory by the catastrophe of Germany, should provide a lasting and vivid lesson burned deeply within the consciousness of our people. Technical competence is not enough: there must also be firm adherence to fundamental moral and spiritual values. Engineers are in duty bound not to sit on the side-lines while the struggle between ideologies and between conflicting principles of government goes on: their business is to be participants in the arena. As President Hutchins puts it so well:

"We are men before we are salesmen or Englishmen. We are human before

we are American. We are citizens before we are engineers or accountants. We all need an education for human and political activity, and we need it more as adults than we do as children."

In order that you may play a proper part, outside of your technical duties, in the business of society, it is necessary for you to know, to understand and to accept the principles on which the American system is based. The essential tenets are threefold. It happens, and I think not by accident, that they correspond to basic doctrines held by the Christian church. I have time to present them only briefly and in outline.

I. THE INFINITE VALUE OF THE INDIVIDUAL. This doctrine exalts the dignity,the worth, the integrity and the inviolability of the human spirit. Under this principle we may not approve regimentation or mass action. The precious thing is the personality of the individual. If that is infinitely valuable, it is also infinitely worth cultivating. It follows that the most important task of society is to see to it that each man reaches his full potential stature.

II. THE PERFECTIBILITY OF MAN. Man is capable of growth, of improvement, of regeneration. Biologically he is an animal. But as an integrated personality, with powers of cognition and reasoning he belongs to another sphere. His feet are imbedded in the clay of the earth, but his head is among the stars. He thinks, reasons, plans, sees visions and dreams dreams. Civilization arose through education, and that process must be continued if the slow progress of the race is not to be arrested.

III. THE DEMOCRATIC DOGMA. The three fundamentals of the Jeffersonian tradition in this country are freedom of the mind, social mobility through education, and universal schooling. Universal schooling needs no explanation.

Freedom of the mind means freedom of expression of one's beliefs and convictions however unpopular these may be. Social mobility means that no artificial or arbitrary barriers are imposed to prevent talent from arising to its appropriate level. These principles, even though not yet wholly regnant, are the glory of American democracy. This is the kind of society to which you are called upon to adjust yourselves, and these are the principles which you will be expected to uphold.

A moment ago I spoke of the background of the humanities. There is one feature of this program that I must emphasize. It is imperative that the engineer train himself in the fluent and correct usage of his mother tongue, both in speech and in writing. I am not speaking of the preparation and delivery of Fourth of July orations. I have in mind appearances before boards of directors, school boards, committees, city councils, where you will have to sell your ideas and, in many cases, yourself. In these situations there are always two factors present: what one has to say, and how one says it. As bearing on this point I quote from an editorial in the *Engineering News Record* of May 31, 1945:

Senator Criticizes Engineer

"Recently at a Congressional hearing in Washington a capable civil engineer holding a responsible position was criticized by the Senator serving as chairman because of the engineer's failure to speak with sufficient vigor to permit all of the small group present to hear. Unforunately this is no isolated example. It is the rule rather than the exception when engineers appear in public. That fact needs to be recognized by those who complain so bitterly over public apathy toward engineers as a group. Their program directed toward public recognition must begin within the profession itself. Until engineers learn to look upon their own contributions as of such importance as to call for forceful and convincing presentation they cannot expect the public to hold their profession in high esteem."

Fundamentals of Self Expression

As an additional evidence of the public attitude let me quote from an editorial in a recent issue of the Minneapolis *Star-Journal*:

"The benefits of thorough training in the fundamentals of self expression are twofold. Not only is the individual so trained able to transmit his ideas to others, but he is also equipped to comprehend the thoughts of his fellow men. In a world trying to organize itself into an orderly society after the chaos of war, the need for a maximum of such comprehension cannot be overemphasized."

I have urged that you regard engineering as a profession and that you now make the momentous decision to embark upon it as a professional, with all the responsibilities and obligations thereby entailed. But you have a right to ask, What is a profession? You have a right to receive an answer from a professional source, an answer couched in frank and unequivocal language. I quote now from a statement by Prof. B. J. Horton of St. Johns University:

"1. A profession must satisfy an indispensable social need and be based upon well-established and socially accepted scientific principles.

2. It must demand the possession of a body of specialized and systematized knowledge and must have developed a scientific technique which is the result of tested experience.

3. It must require the exercise of discretion and judgment as to time and manner of the performance of duty; this is in contrast to the kind of work which is subject to immediate direction and supervision.

4. It must have a group consciousness designed to extend scientific knowledge in technical language.

5. It must recognize its obligations to society by insisting that its members live up to an established and accepted code of ethics."

The Mark of a Professional

The mark of a true professional spirit is ability and willingness and desire to do voluntarily in the public interest what the law does not and can not command. This point of view is well set forth in the following timely paragraph from W. E. Wickenden, president of the Case School of Applied Science, in *Electrical Engineering* for February, 1945:

"The essence of a profession is social trusteeship. A physician is expected not only to be skilled in the arts of diagnosis and of therapy, but also to guarantee in company with his fellow physicians the standards and facilities of the health service offered to his community. A lawyer is expected not only to be skillful in drawing legal instruments, in pleading cases and in composing disputes, but also to join with his colleagues in guaranteeing the standards of justice in the courts and legislative bodies. One requires of a clergyman not only the services of a spiritual minister and adviser, but also that men of the cloth unite in giving voice to the public conscience and force to public morals. Likewise, an engineer is asked not only to be expert in the technique and economy of materials and energy, of structure and products and utility services, but also to guarantee that society will reap the fruits of

(*Continued on next page*)

Professional Engineers And Society

(*Continued from preceding page*)

scientific advance and technical progress in general well-being."

Note the significance of the last three words quoted: not general destruction, not general devastation, not general terror, not general subjugation of the many by the few, but *general well-being*.

Professional Responsibilities

In view of these facts as set forth by well-qualified men there are certain professional responsibilities which you young men should be prepared to assume as you set your course toward the goal of professional status. These have been well outlined by Clarence E. Davies, secretary of the American Society of Mechanical Engineers, as follows:

"1. To advance and extend knowledge and art.

2. To maintain high aims and standards for the education of those who are to become engineers. (He revealed that in 1948 about 21,000 young people will be graduated in engineering in the United States.)

3. To maintain high standards for entrance into the profession.

4. To increase the usefulness of the profession.

5. To maintain high standards of conduct between the engineer and his client, his employer, his colleagues and the public.

6. To minister to the public interest."

Register Under State Law

The first step toward assuming these responsibilities is obviously to register as a professional engineer under the laws of Minnesota. Fortunately, in this State there is an intermediate step which you may take pending the acquisition of the required practical experience. That step is to register now as an Engineer-in-Training. Your feet will then be well set on the path that leads ultimately to professional status. Do this whether your first job requires it or not. Do it for the sake of the profession to which you will owe your livelihood. And I may remind you that thereby you will escape later the onerous task of taking examinations over subjects in which you may find yourself rusty.

There are many reasons why engineers should seek legal registration. These reasons have been summarized as the result of a survey made by M. W. Cameron, chairman of the Public Relations Committee of the National Society of Professional Engineers. They are as follows:

"1. Registration is required by law where the practice of professional engineer affects the public health or safety. Of course the work of a large number of engineers falls within this category, either directly or indirectly.

2. Registration implies legal recognition of professional competency.

3. Registration will promote public recognition of the professional status of the engineer.

4. The term 'engineer' is used so loosely in this country that people need to be educated to the significance of the term 'professional engineer'. This term must come to signify a group of men who, through education, experience and legal recognition, are in a different category than the man who runs the engines down at the local brewery.

5. Registration provides legal recognition of the professional status for collective bargaining.

Personal Satisfaction

6. There is a deep personal satisfaction which an engineer should derive, and does derive through registration and legal recognition of his qualifications.

7. I have submitted my record to a body of men established by law for the purpose of distinguishing *professional* engineers from those that are not professional in the legal sense. My State Board has proven my claim to this distinction and has established legally my right to be identified as a member of the profession.

8. By registering I make a definite contribution to the records of the achievements and accomplishments of a group of professional men who have similar interests and activities, so that I may add to the weight of their influence in the affairs of the State and Nation.

9. I registered so that I may be more effectively protected against trespassers, interlopers and pretenders.

10. My decision to register stems from my conception that it is the duty of each generation to contribute something worthwhile for the benefit of the generations yet to come. I believe that the practice of recognizing engineers as being truly professional through the process of registration, is a great contribution to the welfare of the future generation of engineers. Our own generation can render no greater service than to see that this practice is firmly, soundly and permanently established. Thus the young engineers of the future may have upheld before them this worthwhile goal which may be achieved in due time through their own efforts. In short, registration stands for a proper recognition of unusual ability, good character and superior achievement."

Code of Ethics

I assume that in the process of making yourself competent you will join the technical society of your specialty. You will probably also join with your fellows in some overall organization to promote the social and economic welfare of engineers. In all of these you will find much talk of a Code of Ethics. A later lecturer in this series will deal with that topic: I have only this brief observation to make. All codes of ethics can be boiled down finally to one terse and cogent sentence enunciated many centuries ago—the Golden Rule: "Whatsoever ye would that men should do to you, do ye even so to them". Modern codes are merely amplifications and expansions of that definitive sentence. No man can go wrong who sincerely follows that rule. Our failures come not from lack of knowledge but rather from lack of will.

I now close with an appeal to you to make the pursuit of excellence the ruling passion of your life; to set for yourselves high standards of integrity and responsibility; and to adopt for your guidance an inflexible rule of ethical conduct in public and private relations. So shall you be not only good engineers but also good citizens.

Encouragement of Students

For a final word I am constrained to leave with you a paragraph written for the encouragement of good students by William James:

"Let no youth have any anxiety about the upshot of his education, whatever the line of it may be. If he keep faithfully busy each hour of the working day, he may safely leave the final result to itself. He can with perfect certainty count on waking up some fine morning to find himself one of the competent ones of his generation, in whatever pursuit he may have singled out. Silently between all the details of his business, the power of judging in all that class of matter will have built itself up within him as a possession that will never pass away."

Comment during the questioning of an atomic bomb expert: "If any of us ask you a question which seems to have any semblance of intelligence pertinent to the subject, it is purely coincidental."

Minnesota Paper Presents Leadership Award to S. L. Stolte

S. L. Stolte could have carved out a career as a public speaker—but fortunately for the engineering profession he developed a strong personal desire to build buildings.

And now, after years of engineering practice in which he has fulfilled this desire, the people of Minnesota have honored him, not only as an engineer, but as a leader of the State.

After graduating from the University of Minnesota engineering school he worked for several years practicing architecture and engineering. Then came the milestone—and a lucky day for engineers generally and NSPE in particualr.

Stolte was invited to attend a meeting of the local Engineers' Club where he heard a learned speech on heating and ventilating. But in looking around the room Stolte realized that many present didn't give two hoops about heating and ventilating. They were engineers, true, but they built bridges and dams and other structures where temperature and air currents played no important part. *But they were all engineers.*

The Engineers' Club was fine—as a marching and chowder society. As an organization for *all* professional engineers—a total flop.

Sought Professional Group

From then on, Stolte started looking for an organization to serve the common purpose of all engineers. He found it in NSPE, and since has become one of its most vigorous and ardent supporters. At present he is one of the Society's national directors, having previously held many other important positions in it. He is in constant demand for speeches, despite the fact that he spurned forensics as a profession. But while all this was happening to Stolte he didn't neglect the technical side of engineering. He just combined it with his vigorous approach to professional life.

As these two phases developed side by side Stolte became an outstanding example of a professional engineer both in Minnesota and nationally.

Last month word came that the people of Minnesota had finally recognized the great contribution which Stolte has made to the State—not only as an engineer but as a professional leader. The Minneapolis Star and Tribune selected him to receive its Award for leadership in Minnesota.

Presentation was made at the annual convention of the Minnesota Federation of Engineering Societies, of which Stolte incidentally was president in 1946, in Minneapolis.

Inscribed Watch Pendant

The award consists of a watch pendant inscribed, "For Leadership in Minnesota" and a framed certificate which reads:

"In recognition of Leadership in Minnesota. Whereas S. L. Stolte has given a service to Minnesota that has added to this State's supremacy as a place in which to live and work, has brought additional respect to his organization and has enhanced his own prestige as a citizen, the Minneapolis Star and Tribune present to him this award."

Defines Professional Enginer

This presentation brings S. L. Stolte's career to a new high peak—but it's not the end. As a professional engineer he will continue to work for the good of his community, his state, his country and NSPE.

Oh yes—Stolte's definition of a professional engineer:

"A professional engineer is a person educated in the principles of mathematics and the physical sciences who applies this knowledge to direct and control the materials and forces of nature for the safe use and convenience of man."

S. L. Stolte
Has Added to State's Supremacy

Public Demand For Engineers

(*Continued from page* 4)

I am convinced, likewise, that economics and philosophy should be made a part of that curriculum. To be sure, these things can be learned the hard way as Senator-elect Ralph Flanders has learned them, but the inciting of original interest in those subjects in the engineering student's mind would bring many young engineers to the fore in public life at a much earlier age than either Ralph Flanders, or I, in my lesser way, have so found ourselves. In the House of Representatives we have another engineer—a chemical engineer, in the person of Gordon MacDonough, of California, so there are now four of us; two among 435 in the House of Representatives, and two among the 96 members of the United States Senate. We are very much alone.

Senators Greatest Test

From my own eight years experience in the House of Representatives, I can foresee some of the trials and tribulations which Senator Flanders will experience in the United States Senate. As a Junior Senator, he must be in evidence but not heard for some time to come. He must learn the rules and bide his time. The day will come when he will rise from his place and speak, because the truth is in him and must come out. It is to be hoped that many of his colleagues will be present when he first speaks, but his genial personality will cause some one of his new found friends, perhaps, to ask for a quorum before he speaks. That first address will be his greatest test, so he will bide his time. His colleagues will recognize the profoundness of his remarks and in due course, will consult him on matters concerning which he is so well qualified to speak authoritatively. His reputation will grow among his fellows until the quorum call will merely become a notice that Ralph Flanders is about to speak. I trust that it will take a shorter period of service to arrive at that point in the United States Senate composed as it is of 96 statesmen and practical politicians than in the House of Representatives, where there are 435 just good plain American citizens. From that day forward, Ralph Flanders will be a strong power to be reckoned with in the Senate of the United States, because truth in that place is the power that finally controls. When the truth is absent, queer things happen; but when truth is present and expressed in terms that must be understood, then straight thinking ensues.

There should be more engineers in city councils, in state legislatures, in the congress of the United States, and in the positions of executive authority everywhere in the body politic of our country. The mechanical age which the engineers have created demands engineering leadership in public life.

This is an exceedingly critical juncture in the history of the world as a whole and in the history of our own country in particular. We are at a great divide in the highroad. One way leads to the left and the other goes straight ahead. Strong forces are puling us to the left. Obstacles of serious proportions are being strewn in the road that leads straight ahead. A storm blows from the right that we must lean into in order that our course shall not deviate.

This is the time for clear thinking and correct appraisal. This is the time when that practical theoretician, the engineer, must take the lead everywhere. He must find words with which to express the great truths he knows, words that will bring understanding of truth to those who would chase after the rainbow to the left, on the road that leads to obliteration of individual liberty.

You are mechanical engineers. Your kind are in the great machinery manufacturing and in the mass production industries that employ millions of workers. You have the basic information, but do you translate it into simple truths that anyone can understand, and that all men of good will would know?

"So you men of theory and practice —you men of brains and ability—you men who are building the mechanical age—get out in front and lead the way straight down the high road—the hard road—the right road toward freedom and abundance for all."

Employing Practices for Engineers

(*Continued from page* 2)

starting monthly salary of graduates with Bachelors' degrees is $210, with variations from $125 to $320.

Chances are the young engineer will be best paid if he is employed in the machinery, building, paper, glass, utilities, metals or coal industries. The 44 firms in this group report an average starting monthly salary of $210—the highest.

If the young graduate engineer is primarily concerned with the amount of income he will receive, he should not seek employment teaching. Eight reporting colleges pay an average starting monthly salary of $198, the lowest of any group. However, in considering possible employment, the young graduate engineer must remember that the teaching profession offers many advantages which may, as far as he personally is concerned, outweigh the relatively small starting salaries.

When seeking a job in the instrument, electrical, petroleum, chemical or aircraft industries, the young engineer may expect a salary of about $208 which is the average for this group. In the textiles, soap, rubber, automotive, shipbuilding, transportation, or food industries the average starting monthly salary is $204.

3. *What are the young Engineer's chances for advancement?* In regard to advancement after initial employment, only 26 firms gave data. They were all within twelve industries, but none had enough data to indicate a reliably consistent trend for any individual industry, and therefore they were grouped and the average rate of advancement is approximately as follows:

Time of Advancement	*Median Minimum Percentage*	*Median Percentage Base—$207*	*Actual*	*Maximum Percentage*
At the end of				
6 months	2.5	8.0	$16.60	14.3
12 months	3.6	14.6	30.30	28.6
18 months	7.5	24.2	50.00	42.9
24 months	10.0	29.2	60.40	57.2

In lieu of or in addition to standard increases, 76 per cent of the firms report that periodic reviews are made to determine salary increases on a merit basis and 24 per cent are guided chiefly by recommendation of superiors. Less than 7 per cent make adjustments to meet competition and retain capable men.

4. *What types of men are hired?* Ninety-six per cent of the reporting firms employ engineers directly upon graduation from schools, but only 4

per cent recruit their staffs exclusively from new graduates. About 43 per cent hire more than half of their new engineer employees after one or more years' experience with other employers. This is evidently a matter of necessity or expediency rather than preference, because more than 60 per cent of those reporting indicate that they prefer to hire the new graduate.

5. *How are young engineers recruited?* Seventy per cent of those replying send representatives to engineering schools to interview students individually; nearly all of these discuss the candidates personally with members of the college faculties, in addition to interviewing the students themselves. The tight conditions existing in the employment field prior to and to some extent at the time of the survey is evidenced by the fact that 51 per cent of the reporting firms invite students to visit their plants at company expense.

Other means of recruiting new graduates are apparently of little avail. The other methods reported, in descending order of effectiveness are voluntary applications, advertising, summer employment of students, employment agencies, and recommendation of friends.

6. *How are experienced engineers for specific openings obtained?* For filling specific openings, advertising is used by 50 per cent of those replying and employment agencies by 35 per cent. Thirty- five per cent also utilize the facilities of Engineering Societies Personnel Service, Inc. 18 per cent consult placement bureaus; and 12 per cent report that their present employees bring men in. A few firms obtain engineers from associated companies, but United States Employment Service and the National Roster of Scientific Personnel are each used by only one company in this group.

7. *How are engineering employees selected?* Twenty-five per cent of those reporting do not differentiate between engineers and other employees in the process of hiring. The other 75 per cent rely chiefly on personal interviews between the candidates and engineering executives, although 20 per cent employ aptitude or other tests for evaluating the applicant's ability. Only two companies report that engineers are hired without meeting at least one executive engineer.

Of those who rely on interviews with engineering executives, 35 per cent depend on the judgment of a single executive, and less than 50 per cent indicate that the candidate is interviewed by an engineer as high in rank as division head or assistant chief engineer. On the other hand, several companies report that each candidate is interviewed by several responsible engineers, including the top ranking engineering executive.

8. *What are the bases used in selecting engineering employees?* The answers to this one are particularly interesting to NSPE. Strangely enough, the most important single factor considered in hiring is neither engineering ability, experience nor aptitude. It is *personality*—which is a strong argument for professional status. It would seem that employers consider the professional mien or personality of applicants as more important than technical qualifications.

The firms which were approached for the study were offered nine characteristics which could be considered in selecting an engineer. They were asked to list these items in the order of importance given to each in arriving at an overall evaluation of a prospective employee.

In analyzing the replies, the usual statistical method of weighting preferential ballots was used. The results which follow show the order of importance of these qualifications:

1. Personality.
2-3. Scholastic Record.
Indicated promise of Development in Specific Engineering Field.
4. Engineering Experience.
5. Evidence of Ability to Cooperate with Others.
6. Recommendations by Qualified People.
7. Indicated promise of executive development.
8. Standing of College from which candidate was graduated.
9. Salary requested.

If only the first choice of each reporting firm is considered, the order of preference is somewhat changed, but personality still occupies the top spot. However, using this method of analysis, engineering experience ranks second instead of fourth.

In commenting on this valuation of qualifications, the Economic Status Committee report says: "Experience would no doubt rank higher and scholastic record lower, if it were not for the fact that the employment of recent graduates is uppermost in the minds of those seeking to increase their engineering forces."

Well Rounded Individuality

To the above listed qualifications, ten firms added "interest in assignment," three added "character," and two added "interviewer's evaluation."

In concluding its section on the bases of selecting engineering employees, the Economic Status Committee says: "As some of these items are the same or similar attributes in other words, the desirable traits might well be summarized as, a well rounded out individuality with a good personality, qualified by education and experience to make a good engineer."

(*This is the first of two articles dealing with employment practices for engineers and the employer's view of engineering education. The May American Engineer will continue this discussion of the Economic Status Committee Report.*)

Montana Becomes 48th State to Enact Registration Law

The fight for more responsible engineering made progress last month when Montana became the 48th state to enact a registration law.

Now, only the District of Columbia remains without such a law—and this situation will probably be remedied within the next year, according to the DCSPE.

The District Society has long been working on a bill calling for action. It could be passed at this session of Congress, but chances appear better for early next year.

Meanwhile, a review of laws now on the statute books of the various states reveals much work yet to be done before all laws are suitable to assure maintenance of the high character and responsibility of the engineering profession.

Many of the laws need amendments to extend them to all fields of engineering. The responsibilities imposed on the profession are not, in some instances, commensurate with the pubilc interest.

The roll call of states has been completed. Now begins a process of refinement.

MEMBER STATE SOCIETIES N.S.P.E. — *Officers and Directors*

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NEVADA	A. J. SHAVER 209 S. Third St. Las Vegas, Nevada	E. E. KELLER P. O. Box 822 Las Vegas, Nevada	J. A. TIBERTI Box 1662 Las Vegas, Nevada
NEW JERSEY	ALONZO L. JONES (Secretary) 6 Lawrence Avenue W. Orange, N. J. MERTON S. ADAMS 9 Oakland Street Trenton 8, N. J.	DANIEL M. KRAMER 107 So. Gerard Street Woodbury, N. J.	C. GEORGE KRUEGER 85 Van Reypen St. Jersey City, N. J. JOS. M. CERRETA 163 W. Colfax Ave. Roselle Park, N. J.
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Kindly report any errors or omissions to the Editor

National and State Society News

News From the Washington Office

The NSPE will be nearer its goal of a society in every state in the near future, according to correspondence which has been going over my desk for the last few weeks.

Paul H. Robbins

Indications are that at least three and possibly more state societies will ask for affiliation with the national group within the next six months. Furthermore, Col. Michael J. Blew, chairman of the extension committee, has been in the Washington Office making plans for promoting NSPE in still more states. His correspondence with prominent engineers in states having no member societies has brought an encouraging response.

New Editor Appointed

During the last month the *American Engineer* has acquired a new editor, (see article on page 16). He is Thomas J. McBreen whose appointment became effective April 1. Mr. McBreen was selected for this position following a decision by the Board of Directors in Minneapolis to terminate exiting arrangements for publication of the magazine.

The first pieces of addressograph equipment have arrived in the Washington Office and the monumental task of transferring membership records to mechanical operation has begun.

Several of the recommendations of the State Secretaries' Conference for the coordination of the administrative details between the state societies and national Headquarters have been accomplished. The Legislative Bulletin has made its periodic appearance and the executive director together with the legislative analyst has been busy following labor and other legislation in Congress. Periodic reports have been made to the Legislative Committee concerning activity in connection with the testimony and work of the panel of engineering societies concerned with labor legislation.

Membership has continued to grow and as of March 31, totalled 14,971.

The Executive Director in company with the President attended and spoke at the Annual Meetings of the Ohio Society in Columbus and of the Connecticut Society in Bridgeport. In addition, the Executive Director has addressed joint meetings of the Student Chapters at the University of Wisconsin and the University of Maryland. President Lawrie has been active in his work with the Joint Engineering Panel on labor legislation and addressed a sizable group of profesional engineers in Schenectady, New York. Vice President Van Praag attended the annual meeting of the New Mexico Society of Professional Engineers and the Arkansas Society of Professional Engineers and spoke at each of these meetings.

Distinguished Visitors

The Washington Office has had several visitors. Among them Mr. Trigg Twichell, Vice President of the Texas Society; Mr. Robert Coltharp, Director of the Texas Society and Mr. Charles Dodge, Managing Director of the New Jersey Society. Mr. James Costello, the newly appointed Executive Secretary of the Pennsylvania Society, spent a couple of days in the Washington office, becoming acquainted with the philosophy and activities of NSPE. We welcome Mr. Costello to this important position and congratulate the Pennsylvania Society on this forward step in the administration of its state activities.

NSPE Distributing Newly Published NLRA Manual

The Joint Committee on the Economic Status of the Engineer, on which NSPE has a representative, has just published its "Manual on Collective Bargaining for Professional Employees—The National Labor Relations Act and Professional Employees."

This manual is a must for every engineer's library. If he has a labor relations problem or if he is an employer he needs it now—today. If he has no immediate problem, he needs it for future reference—as an assurance that he will always be informed as to his rights and obligations under the National Labor Relations Act.

This book analyzes the essential features of the Act, including the rights guaranteed employees. It reviews activities of the various engineering societies in the labor relations field, examines proposals for modification of the NLRA, appraises courses of action open to professional employees under the Act, presents the advantages and disadvantages of various types of labor organizations open to professional employees, and discusses conditions which must be met, steps to be taken and responsibilities involved in establishing a labor organization.

As a basic source book, the Manual on Collective Bargaining gives the professional employees the background against which he must interpret and appraise current developments in the field of labor relations.

(Your copy of the Manual on Collective Bargaining—The National Labor Relations Act and Professional Employees may be obtained now from the National Society of Professional Engineers, 1359 Connecticut Ave., Washington 6, D. C., or through the NSPE State Societies. Price one dollar.)

Coming Events To Remember

National Meetings

July 11—State Secretaries Conference, Statler Hotel, Washington, D. C.

July 12—NSPE Board of Directors Meeting, Statler Hotel, Washington, D. C.

State Meetings

May 2-3—20th Annual Convention, New York State Society of Professional Engineers, Hotel New Yorker, New York, N. Y.

May 26—Annual Meeting, District of Columbia Society of Professional Engineers, Continental Hotel, Washington, D. C.

New Editor Assumes Duties with American Engineer

Beginning with this issue the *American Engineer* has a new editor, Thomas J. McBreen of Silver Spring, Md.

Mr. McBreen comes to the magazine after an extensive editorial and public relations career in Washington. During the early part of the war he was managing editor of four daily business reports published by the Bureau of National Affairs, an organization affiliated with the United States News magazine.

Early in 1943, as a direct result of a series of articles written for these publications by Mr. McBreen, he was drafted by the War Production Board to direct its public relations and education program on the Controlled Materials Plan—the program used to direct flows of raw materials and component parts to plants producing war materiel.

Program Accepted

The editor's term of service with the war agency saw the final acceptance of this program by industry which had first viewed it with open hostility.

When CMP had been "sold" to U. S. industry, Mr. McBreen left WPB to assume the post of chief economist for the Senate Small Business Committee, then under the chairmanship of Senator James E. Murray of Montana.

While with this organization, he planned and conducted its investigation of the government's reconversion program and was instrumental in bringing relief to many small industries which were being overlooked in the rush to return to normal peacetime methods of operation.

Price Investigation

Under Mr. McBreen's guidance, the committee staff conducted an extensive investigation of price controls and their effects on small businesses. This survey resulted in a series of hearings by the committee and recommendations to the Senate, many of which were adopted in the last amendment to the Price Control bill.

Six months ago Mr. McBreen left the committee to undertake an investigation of and make recommendations to the oleomargarine industry on its public relations problems. He has completed this survey.

In taking over the editorship of the *American Engineer,* Mr. McBreen is returning to his first love—magazine work and the publishing business. He will also direct the public relations activities of NSPE.

Thomas J. McBreen

ARKANSAS

The United States has fallen heir to the job of maintaining Western civilization—and the profesional engineer must play an important role if this purpose is to be accomplished, John W. Atkinson told the annual meeting of the Arkansas Society of Professional Engineers in Little Rock on March 27.

Implying a major role for engineers in the future world, Mr. Atkinson, who is a Little Rock attorney, forecast the gradual breakup of the British Empire and said, "it will become more and more apparent that it is up to the United States to supply the force and direction of our political aims in peace, and if necessary, in war."

Alex Van Praag, Vice President of NSPE, addressed the luncheon meeting of the Society on the same day. Mr. Van Praag warned the group that the engineering profession has become "so engrossed in scientific and technological development that we have virtually buried our heads in mathematics and science." He urged members of the Arkansas society to devote their "full and undivided attention to the development of our professional, economic and social status."

Chief Justice Griffin Smith spoke at an afternoon session on professional ethics. He urged engineers to maintain high standards and consider the ideal of public service as well as monetary return.

Floyd R. Oliver, Arkansas District engineer for the Public Roads Administration described the effects on Arkansas of the national inter-regional highway program.

DISTRICT OF COLUMBIA

The District of Columbia Society of Professional Engineers is continuing with plans to bring about enactment of a local registration law. The program was discussed at the March and April meetings of the group which hopes to press for early action by Congress.

Meanwhile, the Society held a joint meeting with the Illuminating Engineering Society and heard William H. Kahler of the Westinghouse Cleveland Works discuss new methods of lighting offices.

ILLINOIS

A strengthening of the Illinois Society of Professional Engineers may be looked for in the immediate future. Duncan M. Campbell, newly elected president of the group has sent a message to Illinois members calling for a program of vigorous action along professional lines. Mr. Campbell's highly encouraging message follows:

Our Society in 1946 under the effective leadership of Past President George H. Anderson continued to grow and attained a high membership of 1,564 including all grades. The number of national members increased to 312 which is a most satisfactory growth.

We should endeavor to continue the growth of our State Society and accelerate the increase in national members toward the day when our membership is to be predominately on the national level. The members of the Society on two occasions have indicated by letter ballot that the Society is to remain a strong affiliate of the National Society of Professional Engineers. It behooves us to work for a larger and stronger active membership, which most important of all will place the Society on a substantial financial base.

The membership of our Society has more than doubled since the advent of the Illinois Professional Engineering Act in 1945. This increase in membership has brought an attendant increase in the duties and responsibilities of the Board of Direction and the Secretary-Treasurer. These Officers are keenly aware of their duty to broaden the scope of Society activities and to make available to the members a broader field of service.

The Society for many years has discussed in Chapter Meetings and Annual Meetings, and in the pages of The Illinois Engineer the pros and cons of the question, "How, when and

where are we going to employ a full time Secretary?" The Board of Direction has at last taken a forward step in an attempt to answer this perennial question, by appropriating in the Annual Budget for 1947 a substantial sum for the employment of a full-time Traveling Secretary.

This officer will work under the direction, and be responsible to the Secretary-Treasurer with the advice of the Executive Committee. His duties will include visits to the Chapters to cement the ties of mutual interest; to assist committees; to confer with candidates for membership and to promote new members; to follow up complaints concerning unethical practices; and such other duties as may enhance the welfare of the Society. The Executive Committee and the Board of Direction are making a vigorous effort to employ a competent man for the position.

Need Large Active Membership

The growth and present day success of your Society has been effected through the loyalty and enthusiasm of all members. I am sure that all of us will continue this hard work, and help to build a stronger and more prosperous Illinois Society of Professional Engineers. Our Society to be effective and forceful in promoting the economic and social welfare of the engineer, must have a large and active membership.

There are in Illinois today over 15,889 professional engineers licensed under the Professional Engineering Act. This is a fertile field for missionary work, and contains many potential members of the Illinois Society. As president of your Society, I earnestly urge that each of you solicit for new members among your fellow Engineers.

Duncan M. Campbell, *President.*

An amendment to the Illinois Professional Engineering Act has been proposed to give members of the Armed Forces two years after discharge within which to apply for a registration certificate without the need for an examination. At the present time, the law allows one year for such applications.

MICHIGAN

Last February 20, the Michigan Society finally got around to presenting its Detroit Chapter with a charter. But this was just a formality.

As a matter of fact, the Michigan Society was born in Detroit and has its greatest membership strength there. During the formative period, the Detroit members *were* the Michigan Society—but those days are past. Two councils had been chartered prior to the Detroit group—one in Saginaw Valley and one in Grand Valley—but neither of them is as large as the newly chartered Detroit group which includes about 230 of the State's 350 members.

After these formalities were concluded, the Detroit charterites went right to work. On March 19, in Detroit's Rackham Building—scene of many of the chapter's activities—50 newly registered engineers received their certificates.

Watts A. Shelley, Executive Secretary of the Michigan State Board of Registration for Architects, Professional Engineers, and Land Surveyors, presented the certificates to the new registrants—but only after the Detroit Chapter had played host to them at a dinner. How many signed up for Detroit, Michigan and NSPE has not been reported. (See pictures this page.)

Detroit Chapter Presented with Charter

Left to Right, Louis A. Bosworth, secretary; Paul Calkins, Board of Managers; Stephen G. Szabo, President MSPE; Arthur Plant, chairman; Theran C. Tayler, treasurer, Donald E. Trefry, secretary MSPE; and P. J. Endlich, Board of Managers.

NEW JERSEY

At the twenty-third annual convention of the New Jersey Society of Professional Engineers, held April 11 and 12 in Newark, Admiral Thomas C. Kinkaid, USN Commander of the Eastern Sea Frontier, reviewed the status of the Navy today as compared with the last year of the war.

Admiral Kinkaid was well received by the New Jersey engineers who know him as the naval hero of the Philippines.

Sixty-five major firms displayed up to the minute engineering exhibits showing the development of professional engineering during the last

New Detroit Registrants Dine with Chapter

year. The exhibits were on view in the Newark Essex House, scene of the convention.

For the second successive year the governor of New Jersey proclaimed the week of the New Jersey Society's annual convention "Engineers Week in New Jersey."

Charles J. Dodge, managing director of the Jersey Society, is continuing to sell graduating engineers on registration. Following a recent talk which he gave to a group of 140 engineers of the Bakelite Corporation, 21 members of the audience individually requested licensing applications.

NEW YORK

The New York County Chapter held a discussion at its April 15 meeting of the proposed new schedule of minimum salaries which is slated for consideration at the State Society's convention in New York on May 2 and 3.

This new schedule proposes five grades (existing schedule has seven) of engineers and two salary scales, one for New York and the other for outside areas.

It was pointed out that definitions suggested for the five grades depend to a great extent on the degree of administrative responsibility entailed in the work being classified. This is a simple common denominator for some types of engineering work, it was said, but many engineers have expressed an objection to it because, they feel, it does not give proper recognition to individual skills.

The new salary schedule has been proposed because many engineers in the State have expressed the feeling that the existing schedule is too low in view of rising costs of living and the increases which have been won by organized labor.

Mr. Charles Weinstein, Regional Counsel of the Office of the Housing Expediter, spoke on the Wagner-Ellender-Taft housing bill.

Members of NSPE—and particularly those of the New York State Society—are "riding a winner" in the engineering societies derby, Gustave Karlsteen, chairman of the state membership committee says in a letter to all members of the New York State group.

Mr. Karlsteen points out that NSPE is doing more than any other society to solve the profession's handicaps and calls on members to increase the organization's strength by getting new members.

"Bet to win" says Chairman Karlsteen.

The Westchester County Chapter held its annual meeting on April 22, with Engineer William H. Larkin present as guest of honor. Mr. Larkin is first vice-president of the NYSSPE and an active member of NSPE. He spoke on national activities.

Members of the Niagara County Chapter of the NYSSPE heard Dean Paul E. Mohn of Buffalo University at their February meeting. The Dean discussed efforts being made by Western New York educators to expand engineering instruction facilities in the Niagara Frontier Area. At the present time, he reported, evening school graduate instruction is available for engineers desiring to obtain master's degrees.

Engineer Charles M. Krick has announced that Niagara Engineers will assist in the Soap Box Derby program, conducting classes in construction techniques. Harold V. Hawkins is in charge.

Harold V. Hawkins, chief electronic engineer for Bell Aircraft Corporation spoke on radio controlled planes at the March meeting of the Niagara County Chapter of NYSSPE.

Mr. Hawkins said that work on radio controlled aircraft, a project which Bell Aircraft undertook for the Army Air Forces in 1944, has proved but a stepping stone to the guided missile world of tomorrow. The first radio controlled flight made by Bell engineers took place September 22, 1944. Radio controlled flight, Dr. Hawkins explained, is achieved by a special radio equipped with oscillators that produce ten separate tones at frequencies ranging from 320 to 6,250 cycles per second. Each tone has a particular job so that it is possible, with combinations of tones, to produce 28 independent functions. The controls of the robot plane are equipped with drive motors which are put into operation by the tones thorugh a selective relay system. The talk was followed by a motion picture, "Planes without Pilots," showing the robot planes in flight.

A general meeting of the Erie County Chapter of NYSSPE was held March 18, at which Mr. W. H. Formhals, development engineer, spoke on practical considerations which are necessary in motor manufacturing.

Mr. James Fairman, Vice-President of the Consolidated Edison Company of New York addressed a late February meeting of the Erie County Chapter, on "Organizing the Engineering Profession."

Mr. Fairman said, "Engineers should stop being critical and agree among themselves, decide on a common denominator and present a united front." He recommended NSPE as the most logical organization for the profession because of the license requirement for membership and the fact that it embraces members from all branches of the profession.

The April meeting heard William D. Roesser, vice-president of the J. W. Clements Co., speak on the subject: "Engineers and Public Speaking." There has been much recent discussion of this need (see Hinshaw article, page 3).

The Albany County Chapter heard a March 18 talk by Herbert G. Morse of the Albany Office of General Electric on "Modern Public Transportation." Mr. Morse's talk was illustrated with motion pictures and slides.

The Bronx County Chapter in conjunction with the local chapter of the American Institute of Architects gave a dinner on March 18, in honor of Edward T. Crinnion in recognition of his outstanding contributions to engineering and architecture.

SPECIAL NOTICE

Dues Question Settlement

Attention of the Washington Office of NSPE has been called to the fact that there is still some confusion in the field on the question of future dues policy. The annual dues for members of NSPE have been established at seven dollars. Action of the Society was definite on this point. Dues do not increase automatically the first of next year. Some members have had this impression.

New OSPE Officers Meet With Engineer Notables

Left to Right, John J. Heier, new OSPE vice-president; NSPE President Ritchie Lawrie, Jr.; Allison C. Neff, retiring president, OSPE; H. E. Nold, past president of NSPE; and John D. Coleman, new president, OSPE.

OSPE Holds 68th Annual Convention -- Economic Forum Highlights Program

Highlight of the Ohio Society's 68th annual convention, held in Columbus March 20, 21 and 22, was the Friday morning forum on the "Professional and Economic Status of the Engineer."

Chief speakers at this session were: J. S. Kennedy on the Economic Status of the Engineer; R. W. Holmes on Evaluation of the Engineer in Practice; H. C. Atkinson on The Engineer as a Citizen; and Benjamin Eisner on Earning Opportunities for the Engineer Employee.

Election of Officers

The election of Officers for 1947 saw the following successful candidates: John D. Coleman, president; J. J. Heier and A. E. Rowe, vice presidents; J. R. Shank, treasurer; and D. W. Converse, secretary. A total of 1,142 ballots was cast in these elections.

Mr. Coleman is at present the supervisor of material utilization, Works Manager Staff of the Frigidaire Division of General Motors. Since his graduation from West Virginia University in 1925 he has held various important chemical and engineering posts with the General Motors Company.

Mr. Heier is railroad crossing engineer with the Bureau of Bridges and Railroad Crossings of the Ohio Highway Department, while Mr. Rowe is a consulting engineer. Mr. Shank has been at Ohio State University since 1917. He is now professor of structural engineering and assistant director of the Engineering Experiment Station. Mr. Converse is a bridge engineer for the A. C. & Y. Railroad.

To illustrate the failure of engineering schools to instill a professional attitude in their students, Mr. J. S. Kennedy told the Professional and Economic Status Forum, "When I first entered the University we were required to learn this definition: 'An engineer is one who by scientific research and design utilizes the materials and forces of nature for the benefit of mankind.' * * * Suffice it to say that the memorizing of the above definition was the sum total of my education in professional thinking. So far as I can recall, we were never admonished that we were entering an honored profession, we received no instructions relative to professionalism, ethics or our responsibilities to our fellow engineers or to society. We, like many others before and since, were graduated as engineers and any resemblance to professional men was purely coincidental."

Mr. Kennedy then outlined the development of engineering societies, describing in particular the evolution of the Ohio Society and its affiliation with NSPE. He pointed out that NSPE has a vigorous constructive program which was formulated at a convention held in Cleveland.

Gaining National Recognition

Mr. Kennedy called attention to the fact that this program is chiefly aimed at achieving a national recognition of engineers as professional men in the true sense of the word.

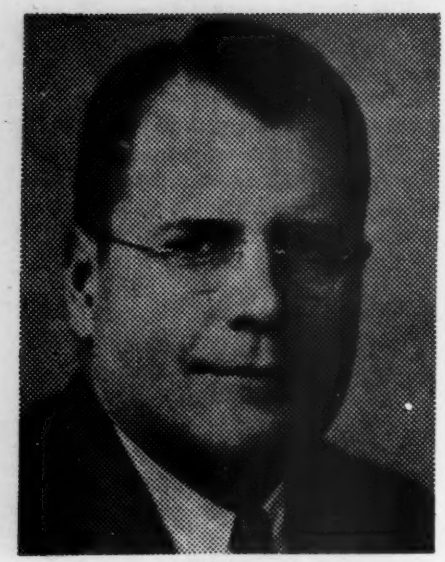
He then concluded his remarks: "We engineers must decide what status we wish to achieve with respect to professional recognition. I am an idealist when I say that we *can* achieve professional status, but I am also realist enough to know that it is the responsibility of each and every one of us if this is to be brought into reality.

"There is a long road ahead. Registration is the keystone. When you are a registered engineer you have a definite standing in the eyes of the law. Professional recognition can only be achieved on a national scale so NSPE is the best foundation on which to

(*Continued on next page*)

Ohio Ladies' Luncheon Meeting

Left to Right, Mrs. John Hale, NSPE Director's wife; Mrs. J. R. Shank, new treasurer's wife; Mrs. Lloyd Chacey, executive secretary's wife; Mrs. A. C. Neff, wife of retiring president; Mrs. John D. Coleman, new president's wife; Mrs. John J. Heier, new vice-president's wife.



J. S. Kennedy

(*Continued from preceding page*)

build our structure. It has the program, the organization and to date it has builded well. It is not perfect, no, but it is ours and we have made it. We can change it to meet conditions as we see fit. To make it the success it deserves will require the hard work of many, the individual and collective thinking of the best minds we possess and the interest and support of all.

"In conclusion let me observe that never before in the history of mankind have we seen the peoples of the world marching in military might on one side or the other. We are in the midst of a world revolution.

"If we are to survive, there must come out of all this new vision and new leadership of a high order.

"I feel sure that if the generation that preceded ours had done as much for professional advancement as has been done in the past decade, you and I would be immeasurably better off today.

"I hope that I can live to see the day when we will forget about being a civil, electrical, mechanical or some other variety of engineer but will be proud to say, 'I am a Professional Engineer.' 'Professional Engineer' with all that implies. A name that will mean something, not only to those who bear the title but also to the public which hears it."

The Ohio Society's Board of Trustees held its regular dinner meeting April 4, following the convention. Major topic of discussion was legislation. It was reported that a substitute bill for the one amending the state registration act has been offered. This substitute eliminates certain restrictions in the original bill relating to the practice of engineering by corporations.

The meeting also heard a report on a bill to adjust county engineers salaries. It establishes a minimum of $3,600 and a maximum of $7,500 a year.

The Marion Chapter of OSPE held its monthly dinner meeting April 14, following which it heard Dr. A. J. Deutsch, professor of astronomy at Ohio Weslyan University speak.

Dr. Deutsch is a recognized authority on astronomical subjects, having his own weekly broadcast over the Ohio State University radio station. He speaks on such subjects as "Our Place In Space," "Is There Life On Other Planets," "Stars As Atomic Energy Plants," and "Rockets in the Sky."

Marion Chapter President Charles Whysall appointed the following membership committee: John H. Wagner, chairman, Merle Johnson, Loy Rhoads, Ralph Gaverick, Frank Klaus, James Harmon, Paul Keil, and H. D. Schoonever.

He has also announced the following committee chairmen: James Barker, legislative; E. W. Koeppen, professional practice and violation; Robert Klatt, engineer in industry; F. W. Norris, publicity and public relations; John Wagner, membership; and J. F. Weis, program.

Registered engineers in Kentucky have been invited to become affiliated with NSPE through the Cincinnati Chapter of OSPE, until such time as Kentucky has its own state society.

This invitation was formally extended by the Cincinnati Chapter at its regular March meeting which was designated "Kentucky Night." Many of the Blue Grass State's engineers are expected to take advantage of this neighborly offer on the part of the Cincinnati group.

Mr. S. Goodman, Chairman of the Cincinnati Bar Association Committee on Ethical Practices and former Vice-President of the Ohio Bar Association, spoke to the Ohio Chapter and their guests on professional problems.

Mr. Goodman pointed out that no professional organization can assume that either the law or the organization itself can prohibit the practice of a profession by any individual unless it can be demonstrated that the public is damaged by such practice.

He told the meeting that the Ohio Supreme Court has upheld a number of cases involving the practice of medicine and law, but that as yet there has been no test of the Ohio registration law relating to engineering practice.

The Maumee Valley Chapter of the Ohio Society of Professional Engineers has started a new publication—the Maumee Valley Engineer. The *American Engineer* wants to take this opportunity to welcome this new bulletin—belatedly but non-the-less cordially—to the field of professional engineering publications.

Burt Wyandt and Fred Horn of the Maumee Chapter are co-editors of the new venture and all communications in connection with it should be sent to F. C. Horn, Box 124, Lima, Ohio.

The Mahoning Valley Chapter of OSPE held a joint April 1 meeting with an American Society of Mechanical Engineers (ASME) group. Mr. Walter Dann, assssociate professor at Youngstown College, spoke on "The Life of George Westinghouse." Mr. Dann is a former employee of the Westinghouse Electric Company.

The March meeting of the Marion Chapter of OSPE was held March 10. Delegates to the State convention were selected and then the group inspected the Mt. Gilead Hydraulic Press Plant.

The Central Ohio Professional Engineer reports that its Legislative Committee, under Chairman E. J. Salsinger, continues to be extremely active. A bill to amend the Ohio Registration Act was introduced and referred to the Judiciary Committee, but it has been withdrawn because of disagreement within the ranks of Ohio engineers. It is expected that this bill will be reintroduced at a later date in more acceptable form.

RESEARCH FIRMS DIRECTORY

The New York State Department of Commerce has published a Directory of Research and Development Facilities at Educational Institutions in New York State. This publication is available to industrial concerns. Write to Department of Commerce, 112 State Street, Albany 7, N. Y.

PENNSYLVANIA

Selection of members of the Atomic Energy Commission is the most important choice ever made by the representatives of the American people, Col. Donald E. Antes, Manhattan Project Staff member since 1944 (*See photograph this page*), told the Reading Chapter of the PSPE at its February 24 meeting.

"Never before in the history of our country has a group of five men been so entrusted with the welfare of America as these members of the Atomic Commission," Col. Antes declared.

To illustrate his point, the colonel pointed out that the atom bombs dropped on Hiroshima and Nagasaki and at Bikini were less than 1 per cent efficient. "Atomic warfare is absolutely the most destructive thing man has conceived," he continued, pointing out that bombs 75 or 80 per cent efficient may be developed.

In discussing peacetime uses of atomic energy, Col. Antes said: "There are two potential uses presently seen—radioactive by-products, such as are used in medical work, and power generation.

"However, due to the limited information yet available on nuclear energy as a power producing agent, it may be some years before we see automobiles, ships, or airplanes propelled by this means."

During his talk, Col. Antes showed films of the bombing of Hiroshima and Nagaski and of the Bikini tests of last summer. He was introduced by John G. Carr, president of the Reading Chapter.

The March meeting of the Philadelphia Chapter heard a discussion of "What is Wrong with our Education?" by Dr. Michael Watter, Chief of the Research and Development Division of the Budd Company. Dr. Watter was a Lieutenant Commander in the Navy during World War II.

In April, the Chapter heard Dr. Lester M. Goldsmith whose talk covered: "A lawyer gets a fee to look in your eye; a doctor is paid provided you don't die; but the Engineer gives all the answers . . . why, why?"

It takes a patriotic industrialist to work day and night increasing production, when by not working so hard he could help to maintain high price levels a little longer.

Col. Donald E. Antes, center, U. S. Atomic Energy Commission Staff Member, with John G. Carr, left, president, Reading Chapter, PSPE, and Paul E. King, chairman of the Chapter's Meetings and Entertainment Committee.

WASHINGTON

The Seattle Chapter of the Washington Society held its general meeting in conjunction with the Puget Sound Engineering Council, March 28. Dinner was served at the Chamber of Commerce.

Principal speakers of the evening were William D. Shannon, vice-president of the American Society of Civil Engineers, on the topic, "Revision of Engineers' Registration Law," and Edward C. Dohm, member of Engineers Registration Board on "Operation of Engineers Registration Act."

WEST VIRGINIA

The West Virginia Legislature has passed a bill to strengthen the state's control over engineering practices and in particular to make its registration law more effective.

The new law provides that no corporation may be chartered in the state under any name which includes the word "engineer, engineers, engineering," or any combination thereof, unless its purpose is to practice professional engineering as defined in the West Virginia code of laws and unless one or more of its incorporators is a registered professional engineer.

Final passage of the measure came in the closing days of the legislature's meeting and as a result of intensive work by members of the West Virginia Society.

Representatives of the West Virginia organization have expressed the opinion that passage of the measure will make enforcement of the state's registration law easier.

NSPE Extension Committee Work

This year, for the first time, NSPE has an Extension Committee. Its purposes are to: (1) encourage the organization of new member state societies and (2) promote the registration of engineers who have not as yet availed themselves of this privilege.

Colonel M. J. Blew, who now occupies a civilian post in the Office of the Chief of Engineers in Washington, D. C., is chairman of the Committee.

Forming New Societies

With reference to formation of new state societies, Colonel Blew says: "Such organizations must be perfected, manned, officered and operated by engineers within any particular state. Promotional work from outside the state can only serve to give essential information to engineers who may not know of the work of the National Society. Correct leadership is probably the most important single factor. If the wrong leader is selected at the outset, the new organization may turn out to be a 'rump' affair and not attract the best engineers in the state."

Other Purposes

Other purposes of the Extension Committee are: (1) promotion of NSPE in local, state, federal and private institutions such as utilities, schools, colleges, research organizations, and other such institutions where the importance of professional registration and organization has not been sufficiently recognized and (2) promotion of NSPE policies and programs with other nationally recognized professional organizations and scientific societies.

Letters From Readers - -

Neither the Ameircan Engineer nor the National Society of Professional Engineers necessarily agrees with the comments, views and opinions which are expressed by the writers whose letters are reproduced on these pages. However, it is the magazine's policy to publish letters which it believes worth while, whether they be in agreement with our opinions or not.

The Editor,
The American Engineer

Since 1932 the role of the Federal Government with relation to the employee has been greatly accented. Much legislation and innumerable executive directives have been issued with the avowed purpose of protecting and advancing his status in our society.

Such regulations were perhaps inescapable during the period of the war but there can be no doubt in the mind of the student that a large portion of them were advanced as political expedients and so surrounded with catch phrases and slogans as to bid for the favor of the "have nots" as opposed to the "haves".

It was during this period that the theory of deficit financing was developed to the *nth* degree. It was during this period that the practice and procedure of collective bargaining was encouraged by the passage of the Wagner Labor Law for its stated purpose, the protection of "the exercise by workers of full freedom of association, self organization, and designation of representatives of their own choosing, or the purpose of negotiating the terms and conditions of their employment or other mutual aid or protection."

Definite Patterns

It is unnecessary at this point to recount the various and fanciful decisions that have been made through the years by the National Labor Relations Board and the various courts in connection with disputes between employees and employers. Suffice it to say that definite patterns have been developed, so that we now quite easily accept the "closed shop"; national labor directors who are authorized to "bargain" industry wide, call strikes and stoppages and otherwise dispose the fortunes and economic status of the dues paying "little" man.

Now as we prepare to look to what the future may hold in store for us it behooves each man to ponder well and carefully those things and those forces that most vitally concern him, his family and his nation. It would not be amiss at this time to go back and review those documents which stand as the rock upon which our founding fathers built their faith in the America which was to come.

Strong Language

Read and digest again the second paragraph of the Declaration of Independence wherein it states, "We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable rights, that among these are Life, Liberty and the Pursuit of Happiness . . ." Strong language, isn't it?

Review again the preamble of the Constitution. Follow through to Section 8, of Article I, with particular accent on paragraph one. Does the 16th Amendment sound as though its proponents had gotten slightly off the beam with the thinking of those wise men of 1787 who declared that "all duties, imposts and excises shall be uniform throughout the United States?"

Read again, and then again, the first ten amendments. This was the work of our *first* Congress, sitting in New York in 1789. These make up our "Bill of Rights." Yours and mine. Upon these must we test our laws, statute by statute, as they are builded through the years.

Financial Structure

Consider anew the financial structure of the Treasury of your country. Realize this Treasury is an empty purse except for what it takes from you and me. It can give to no one except it takes from another. It is your productivity which permits it to operate. Upon your productivity is predicated its promise to pay, but it has established a credit second to no other country on the face of this earth.

Think well upon the advice of those who would try to make you believe that any gain can be secured except as we learn to increase our individual productivity. The whole field of science and engineering is based upon this premise. Only as we have learned to take from *nature* and give to *society* have we been able to create *real* wealth.

Do not be confused by words. It is our misfortune that our "doers" are scarcely ever glib of tongue or possess a facile pen. It is also inversely true that those who can turn a fancy phrase or create the catchy slogan are least able to perform. These are basic and fundamental truths. It was not chance or happenstance that guided our founding fathers when they gathered together to mold the framework of the young republic. It was a deep and earnest searching of their hearts and souls in reverent humility because of their awareness of the magnitude of the task before them.

Wake Up Americans

Wake up Americans before it is too late.

Take heed lest those who would be glad to see our freedoms traded for some "ism" are successful in breaking down those traditions which have made America great. Turn again to Valley Forge, Gettysburg, the Meuse, Argone, Iwo Jima and the rest for inspiration, and once again let all the world see America in its true greatness, a haven for all men of good will, with liberty, justice and the rightful pursuit of happiness for our children and our children's children in all the years to come.

Yours very truly,

B. P. Harrison, Member
Mich. Soc. of Prof. Engrs.

What's New For Engineers

Requests for further information concerning any item mentioned under this heading will be promptly referred to the manufacturer. It would be appreciated if inquiries be addressed on professional or company letterhead.

Send Inquiries Direct to American Engineer, #6 Church Street, New York, N. Y.

STATIC DETECTOR

According to latest available statistics, the loss to business and industry, through damage by discharges of static electricity, is considerable. Location of static charges and the employment of proper corrective measures, can thus reduce this loss. Cognizance of this situation led to the recent development of a reliable instrument for locating the source of static electricity. It is a portable, self-contained electric instrument designed to aid in the study of electrostatic conditions.

It is claimed thta the meter of this instrument, calibrated in terms of static volts, is sensitive enough to detect static charges on the order of fractional volts, either negative or positive. Provided with a 2-position scale range switch, it is possible to measure any voltage from 0 volts to 750 volts.

It is claimed that the meter of this measures both above and below the sparking voltage and is fast in operation. Its low input capacity and high input resistance contribute to the accuracy and reliability of the readings obtained, and provide a true evaluation of the static charge up to 750 volts.

Size of the instrument is 10¾" high by 4¾" deep by 6" wide and the weight is given as 5 lbs. 10 ozs.

For further information address American Engineer, reference No. 603.

CAUSTIC SODA HANDBOOK

An elaborate 72-page handbook designed for use by technical men, buyers and executives interested in the economics of Caustic Soda; the operations man who is interested in the best procedures for unloading, handling and storing this chemical; the engineer who must design equipment and the student or layman who desires useful data on the characteristics, uses, forms, transportation, constants, etc., of Caustic Soda.

The book is printed in three colors throughout and contains many useful graphs, charts and diagrams as well as being profusely illustrated with descriptive photographs. Write for a copy on your company letterhead stating your title.

For further information address American Engineer, reference No. 604.

WATER DEMINERALIZER

A new Water Demineralizer has recently been developed. The model is designed to transform ordinary tap water into the chemical equivalent of distilled water—at a small fraction of the cost of distilled water. The ease with which it is operated and maintained offers unique advantages in water treatment: it requires no heat, no steam, no auxiliary equipment, and only enough electricity to light a 6-watt bulb.

Designed to operate at a 60 gallon per hour flow rate, the unit can be used to deliver water containing a maximum of 10 parts per million of ionized solids—or as little as 1 part per million. A "built-in" controller indicates the actual quality of all treated water leaving the unit; no auxiliary analytical tests are required. The controller measures the electrical resistance of the treated water: it is an accepted fact that water having a resistance of 50,000 ohms contains not more than 10 ppm of ionized solids; hence the controller is adjusted to actuate a red light as soon as the resistance of the treated water falls below 50,000 ohms.

When a higher quality water is required, the setting on the controller is easily changed, in a matter of minutes, to actuate the red light when the water falls below the desired higher resistance. The maximum setting on the standard controller is 500,000 ohms (equivalent to about 1 ppm of dissolved solids). This flexibility of operation makes it possible for the user to have water custom-tailored for his particular needs. Manufacturers of high-purity chemicals, mirror-silverers, and electronic equipment manufacturers are typical users who require exceptionally high resistance water. Whereever water is a raw material or a processing medium, the advantages and economics of demineralized water are gaining favorable attention.

Other standard Demineralizers are available in capacities ranging from 8 gallons per hour to 1200 gallons per hour; larger Units are specially designed for the user's particular needs.

For further information address American Engineer, reference No. 605.

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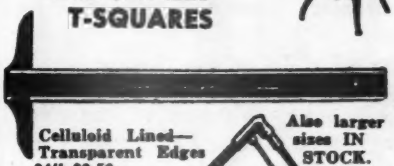

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The material is easily applied with an ordinary scrub brush. When first applied, it penetrates deep into open pores. When it sets, a positive seal is established which, according to the manufacturer, withstands dampness, water, steam, alkali, sun, smoke, heat, cold, frost, ice. It comes in powder form and mixes with water only. One gallon covers 50 square feet for the first coat . . . 100 to 150 square feet when second coat is applied.

For further information address American Engineer, reference No. 606.

POWER GENERATION AND DISTRIBUTION EQUIPMENT

In brief but concise fashion, this 32-page bulletin presents equipment available for power generation and distribution, ranging from steam and hydraulic turbines, turbo generators, engine type generators and condensers and auxiliaries to pumps, water conditioning, motors, motor control, switchgear, circuit breakers, power and distribution transformers and unit substations.

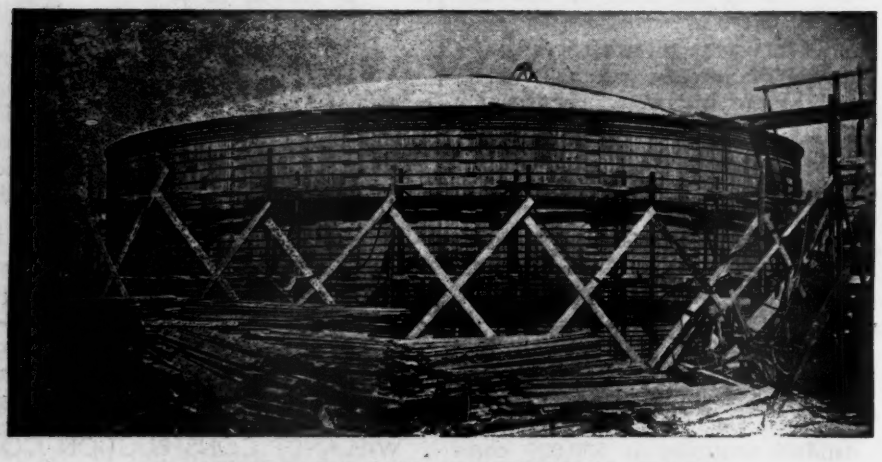
While the extent of the company's line of equipment for the electric power industry is not given in detail it does provide a comprehensive overall view of this manufacturer's contribution to the field.

For further information address American Engineer, reference No. 607.

STEEL DIMENSIONS CHART

An attractive new 28-inch wall chart showing a complete tabulation of steel dimensions has been prepared and will be sent without obligation to all who request it.

For further information address American Engineer, reference No. 608.



• PRE-STRESSED "GUNITE" TANK •

The partly completed "GUNITE" water storage tank pictured above illustrates modern pre-stressed tank design.

Around the outside of the "GUNITE" wall hoop rods are placed and the segments of these rings are coupled with turnbuckles. Tightening the hoops by means of the turnbuckles to a pre-determined stress produces compression in the 'GUNITE" wall. This pre-stressing is designed to maintain the "GUNITE" in some compression when the tank is full of water, thus preventing elongation of the wall with resultant cracks and leakage.

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A fully illustrated 24-page, 2-colo Bulletin recently issued, is unusuall complete in the helpful information provides concerning a very comple line of Industrial Dryers.

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Copies may be had by writing to thi publication.

For further information address Americ Engineer, reference No. 609.

DRAFTING MACHINE

Available for immediate deliver and featuring important improvement in design and construction, a new model Drafting Machine has been announced.

Band covers are now supplied as standard equipment on the 194 models. These covers protect the band exclude dust and dirt, and improv the appearance of the Drafting Machine. They are formed of steel, an are so designed that they do not interfere with the flexibility of the drafting head of the machine. The plastic brak plates used during the war have been replaced with metal plates and the brak ing action has been much improved o the new model.

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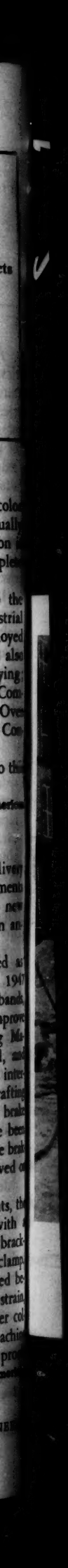
For further information address Ame Engineer, reference No. 610.